

Recent Progress in Solar Interior Modelling

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Acoustic modes are a suitable probe to check the internal solar composition and give constraints on regions of turbulence or mixing in stellar interiors.

The satellite SOHO has measured the most significant acoustic modes including low degree low order modes which are less dependent on the solar surface effects. Consequently the resulting accuracy on the sound speed profile from the core to the surface has been largely improved along the four years of the SOHO mission. The recent results allow us to check theoretical assumptions of solar modelling.

If turbulence is favoured to explain lithium burning in the tachocline layers located at the base of the convection zone, central mixing seems to be definitively rejected by the present observations. Nuclear reaction rates are also indirectly constrained through the behaviour of the sound speed. So, some puzzling problems on maxwellian distribution or dynamical effects in stellar plasma are enlightened by the accuracy of the present seismic data and the theoretical neutrino emissions partly checked.

We begin to have nowadays a dynamical vision of the half external part of the Sun, thanks to the adding density and rotation profile. Gravity modes will be extremely useful to improve the spatial resolution in the radiative region.